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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,644	02/16/2006	Mark Thomas Johnson	NL 030968	4579
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EXAMINER CRAWLEY, KEITH L				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/568,644

Applicant(s)

JOHNSON ET AL.

Examiner

KEITH CRAWLEY

Art Unit

4193

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF 298)
Paper No(s)/Mail Date 08/15/07.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 17 and 19 are rejected under 35 U.S.C. 101 because the claimed inventions are directed to non-statutory subject matter. Both claims are directed to computer program code but do not define any structural or functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program's functionality to be realized.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Zehner et al. (US 7,012,600).

Regarding claim 1, Zehner discloses an electrophoretic display panel, comprising: an electrophoretic medium comprising charged particles (col. 1, line 30-35, the invention relates to bistable electro-optic displays, especially electrophoretic displays); a plurality of picture elements (col. 6, line 22 "plurality of pixels"); electrodes associated with each picture element for receiving a potential difference (col. 15, line 25-40 explains the active matrix display architecture); and drive means (see fig. 2, column drivers 24 and row drivers 22), the drive means being arranged for controlling the potential difference of each picture element to be a grey scale potential difference for enabling the particles to occupy the position corresponding to the image information (col. 5, line 24-26 and more specifically, col. 6, line 20-38, the "look-up table method"), wherein the drive means are further arranged for application of the grey scale potential difference for at least a subset of all drive waveforms (col. 7, line 39-41, the "look-up table method" in which the output signal represents a plurality of pulses, see also col. 10, line 15-27, the use of "sub-scan periods" for the relevant grey scale transition) for setting a picture element from a preceding optical state to a grey scale in two or more pulses (col. 7, line 39-41 the use of a plurality of pulses discussed above, see also col. 10 line 15-27, the use of "double-prepulse waveforms") which change the optical state of the system separated by a non-zero time interval (see table 2, as well as col. 21 line 47-51, "sequence of impulses designed to accomplish an image transition").

Regarding claim 2, Zehner discloses an electrophoretic display panel as claimed in claim 1, wherein the drive means are arranged for, during the non-zero time interval, applying a voltage value below a threshold voltage value below which the particle(s) remain substantially in their position (col. 14, line 37-40, the voltage applied is close to zero when there are no pixels undergoing transitions, also see col. 9 line 31-33 and col. 12, line 61-65 describing the "zero transition").

Regarding claim 3, Zehner disclose an electrophoretic display panel as claimed in claim 1, where wherein the drive means are arranged for, during the non-zero time interval, applying a voltage value of substantially zero (col. 14, line 37-40, the voltage applied is zero when there are no pixels undergoing transitions, also see col. 9 line 31-33 and col. 12, line 61-65 describing the "zero transition").

Regarding claim 4, Zehner discloses an electrophoretic display panel as claimed in claim 1, wherein the drive means are arranged for controlling the potential difference of each picture element to be a reset potential difference (see fig. 8, reset pulse 304) having a reset value and a reset duration (col. 30, line 47-52, "number and duration of reset pulses can be varied") for enabling particles to substantially occupy one of the extreme optical positions (col. 30, second paragraph describes in detail a particular implementation of a reset pulse scheme).

Regarding claim 5, Zehner discloses an electrophoretic display panel as claimed in claim 1, wherein the drive means are further arranged for application of the grey scale potential difference over more than two pulses (see table 2, as well as col. 21, line 47-51, the impulses described "may be part of a sequence of impulses").

Regarding claim 6, Zehner discloses an electrophoretic display panel as claimed in claim 1, wherein the drive means are further arranged for application of the grey scale potential difference in two pulses (again see table 2, as well as col. 21, line 47-51, as well as col. 10, line 15-17, specifically mentioning "double-prepulse waveforms")

Regarding claim 7, Zehner discloses an electrophoretic display panel as claimed in claim 1, wherein the drive means are arranged for application of the grey scale potential difference in two or more pulses (see above) wherein the applied pulses have decreasing time duration as the driving time increases (col. 21, line 60-67, specifically "gray states can be obtained by modulating the length of the voltage pulse applied to the display", see also col. 7 line 39-42, and see fig. 6).

Regarding claim 8, Zehner discloses an electrophoretic display panel as claimed in claim 1, wherein the drive means are arranged for application of the grey scale potential difference in two or more pulses (see above) wherein the applied pulses have decreasing amplitude as the driving time increases (col. 21, line 60-67, specifically "gray

states can be obtained by... modulating the applied voltage", see also col. 7 line 39-42, and see fig. 6).

Regarding claim 9, Zehner discloses an electrophoretic display panel as claimed in claim 1, wherein the drive means are arranged for application of the grey scale potential difference in more than two pulses (see above), the pulses are separated by at least two non-zero time intervals, and the time intervals increase as the driving time increases (same rationale as above, combined with col. 22, line 19-25, specifically "the effective resolution can be increased by imposing a nonlinear spacing of the voltage steps", thus the time intervals can increase as the driving time increases).

Regarding claim 10, Zehner discloses an electrophoretic display panel as claimed in claim 1, wherein the drive means are further arranged to control for each picture element the potential difference to be a sequence of preset potential differences before being the grey scale potential difference (col. 28, line 17-25, namely the other pulses (defined as the first pulse and the intervening pulses) are defined as prepulses to the writing pulse), the sequence of preset potential differences having preset values and associated preset durations (col. 28, line 23, the so-called "prepulse slide show waveforms", determined by the "look-up table method" referenced above), the preset values in the sequence alternating in sign (col. 28, line 44-47, pairs of pulses are described which are typically of equal impulse and opposite polarity), each preset potential difference representing a preset energy sufficient to release particles present

in one of said extreme positions from their position but insufficient to enable said particles to reach the other one of the extreme positions (col. 28, line 44-47, numerous impulses of varying energy may be used, examples are given in the disclosure).

Regarding claim 11, Zehner discloses a method for driving an electrophoretic display device comprising: an electrophoretic medium comprising charged particles (col. 1, line 30-35, the invention relates to bistable electro-optic displays, especially electrophoretic displays); a plurality of picture elements (col. 15, line 25-40 explains the active matrix display architecture), in which method grey scale potential differences for setting a picture element to an optical state from a preceding optical state are applied for at least a subset of all drive waveforms (col. 7, line 39-41, the "look-up table method" in which the output signal represents a plurality of pulses, see also col. 10, line 15-27, the use of "sub-scan periods" for the relevant grey scale transition) in two or more pulses (col. 7, line 39-41 the use of a plurality of pulses discussed above, see also col. 10 line 15-27, the use of "double-prepulse waveforms") separated by a non-zero time interval (see table 2, as well as col. 21 line 47-51, "sequence of impulses designed to accomplish an image transition").

Regarding claim 12, this claim is rejected under the same rationale as claim 4.

Regarding claim 13, this claim is rejected under the same rationale as claim 5.

Regarding claim 14, this claim is rejected under the same rationale as claim 6.

Regarding claim 15, this claim is rejected under the same rationale as claim 9.

Regarding claim 16, this claim is rejected under the same rationale as claim 7.

Regarding claim 17, Zehner discloses computer program comprising program code means for performing a method in accordance with a method as claimed in claim 11 when said program is run on a computer (fig 8 is described as a flow chart illustrating a program which may be run by the controller unit, see also col. 13, line 11-13 and line 38-39, explaining how the method could be practiced on a computer in conjunction with appropriate equipment, as well as implemented in software or incorporated as a part of a CPU).

Regarding claim 18, Zehner discloses computer program product comprising program code means stored on a computer readable medium (col. 13, line 43-44 explains that the look-up table(s) are stored in memory accessible to the controller) for performing a method as claimed in claim 11 when said program is run on a computer (fig 8 is described as a flow chart illustrating a program which may be run by the controller unit, see also col. 13, line 11-13 and line 38-39, explaining how the method could be practiced on a computer in conjunction with appropriate equipment, as well as implemented in software or incorporated as a part of a CPU).

Regarding claim 19, this claim is rejected under the same rationale as claims 17 and 18.

Regarding claim 20, Zehner discloses Drive means (see fig. 2, column drivers 24 and row drivers 22) for driving an electrophoretic display panel, said display panel comprising: an electrophoretic medium comprising charged particles (col. 1, line 30-35, the invention relates to bistable electro-optic displays, especially electrophoretic displays); a plurality of picture elements (col. 6, line 22 "plurality of pixels"); electrodes associated with each picture element for receiving a potential difference (col. 15, line 25-40 explains the active matrix display architecture); said drive means being arranged for controlling the potential difference of each picture element to be a grey scale potential difference for enabling the particles to occupy the position corresponding to the image information (col. 5, line 24-26 and more specifically, col. 6, line 20-38, the "look-up table method"), said drive means being further arranged for application of the grey scale potential difference for at least a subset of all drive waveforms (col. 7, line 39-41, the "look-up table method" in which the output signal represents a plurality of pulses, see also col. 10, line 15-27, the use of "sub-scan periods" for the relevant grey scale transition) for setting a picture element from a preceding optical state to a grey scale in two or more pulses (col. 7, line 39-41 the use of a plurality of pulses discussed above, see also col. 10 line 15-27, the use of "double-prepulse waveforms") which change the optical state of the system separated by a non-zero time interval (see table 2, as well as col. 21 line 47-51, "sequence of impulses designed to accomplish an image transition").

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Matsunaga et al. (US 7,209,112) discloses an image display device having an image display medium comprising a display substrate and a rear substrate having intersecting linear electrodes formed thereon, and containing black and white particles between the display substrate and the rear substrate. An image is displayed at high resolution by controlling a voltage applied to the electrodes.

Gates et al. (US 6,504,524) discloses novel addressing schemes for controlling electronically addressable displays include the use of addressing signals with additional signals having opposite polarity and equal integrated signal strength and addressing schemes that minimize the number of state changes that a display element undergoes. In one embodiment, pre -pulses are employed to apply a pre-stress to an display element that is equal and opposite to the electrical stress applied in addressing the element. In another embodiment, the addressing signal is followed by a post-stressing pulse. Methods for minimizing the number of display elements that must change state to change the image displayed include the determination of a set of elements that must be

deactivated and a set of elements that must be activated to change the image depicted by a display.

Sato (US 4,041,481) discloses a scanning apparatus for an electrophoretic matrix display panel, has a horizontal (X-line) electrode driving circuit to provide a selecting pulse, a vertical (Y-line) electrode driving circuit to provide a data pulse, and an information signal supply means. An electric field is imposed across cells of an electrophoretic suspension layer to change the optical reflective property of the cells in a predetermined sequence after a pause interval by the horizontal and vertical electrode driving circuits. This causes operation of the display panel without cross effect.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keith Crawley, whose telephone number is (571)270-7616. The examiner can normally be reached on M-F, 7:30-5:00 EST, alternate Fri. off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derris Banks can be reached on (571)272-4419. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. C./
Examiner, Art Unit 4193

/Derris H Banks/
Supervisory Patent Examiner, Art
Unit 3725